Effective Search Practices

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Effective Search Practices

As we learned earlier, search engines can lead students to a wide array of websites for any search query. The results returned often include a mixture of valid and invalid websites. Therefore, the ability to validate any website that is to be used for scholarly purposes is essential.

Equally as essential is teaching students to utilize search engines that are more reliable and better equipped in helping students retrieve accurate information.

In many cases, Google is the first website students turn to when performing an online search. This might not be a good idea. The websites that Google returns have no quality control standards. They have been ranked within Google using a complex algorithm that doesn't necessarily take the quality of the content in mind.

Knowing this, and knowing that students most often only look at the first five or ten results without questioning accuracy, it is important to fine-tune their search methods in three ways.

1. Develop a search plan.
2. Teach students to use advanced search techniques.
3. Teach students to use more advanced and more specialized search engines.

In the first part of this section, you will learn how to help students develop a search plan and utilize advanced search techniques. This plan and these techniques will help your students focus their search queries and find more specific and often more accurate web based resources.

Then, you will be introduced to a few search engines that contain characteristics that will improve the quality of resources your students use when researching specific topics.

Finally, you will have the opportunity to put your skills into practice through a series of online searches.

Effective Search Practices – Developing a Search Plan

When guiding students through the process of researching information on the Internet, one of the best things they can learn to do is utilize a three-step research plan.

Step 1 - Define the research problem.
Have students think critically about the research problem and break it down. Questions to consider:

- Is it a relatively simple question?
- Is it a fact-finding mission?
- Is the research question complex with a series of questions or relationships I need to explore?

Step 2 - Know what sort of information you are trying to find.
Once students have a thorough understanding of what they need to find, they might want to consider the best source of information. Questions to consider:

- Am I looking for text, video or pictures?
- Do I need biographical information?
- Is the information I need historic or current in content?
- Should I be asking an expert in the field?

Step 3 - Select the right search tools.
Make key decisions about the best places to find information. Will the information most likely be found in…

- A subject-specific database?
- An historic primary document?
- A regular search engine?

The first few times your students navigate through this process, you will want them to discuss their plans with one another and eventually with you before the research process actually begins. Doing so, you will be able to help them find holes in their mapped out procedure and give suggestions and alternatives.

Before you know it, your students will be able to create very specific, well thought out research plans.

Effective Search Practices – Using Advanced Search Techniques

Let's take a look at a few ideas that will help us develop a step-by-step search process that makes use of advanced techniques.

Start with keywords
Selecting keywords is probably one of the most useful things students can do to get good search results. It is something of an art. A search engine cannot think. The art is trying to think like a search engine.

The more specific students are with their keywords when searching for information, the better their results will be. For example, if a student types in the keyword *French,* a search engine will not know if the search is for *French fries, French cuisine* or *French language*. Therefore, the results will include websites containing all three. This keyword search in Google will lead our student to over 468 million results.

The key to effective searching is knowing what keywords to use in a query.

Start thinking about keywords by asking three simple questions.

1. What keywords MUST be included in the search?
2. What keywords MIGHT be included in the search?
3. What keywords SHOULD NOT be included in the search?

Activity to do with a class of students:
Let's develop a chart with your class that will help them organize search terms for a particular topic. On the board, using a word processing program or using concept mapping software, create a three-column chart. Label the columns MUST, MIGHT, and SHOULD NOT. Have students think of a topic then create a list of key words or key phrases for each column.

In the MUST column have students select keywords specific to their research problem. When teaching these concepts to younger students, many find it helpful to first phrase a research problem in the form of a question to ensure all keywords are included.

In the MIGHT column, students would include synonyms, related and variations of words listed in the MUST category. This is an excellent opportunity for students to think creatively about keywords. It is also an opportunity to think more like a search engine.

In the SHOULD NOT column, have students think of words that might be associated with their topic, but are not of interest. For example, they might be researching horses, but do not want any information about racehorses. Or, they might be researching Shakespeare but do not want any information about sonnets.

Creating query strings
With a plan in place, let's focus on creating specific query strings. These strings help organize a search by adding plus (+) and minus (-) signs as well as quotation marks to connect phrases. These operators along with the Boolean Operators AND, OR, NOT help students "talk" to the search engines in their own languages.

The plus (+) sign
When you see a + sign, you usually think about adding things together to get a larger sum. The + sign in search engines works the opposite way. A + sign in between keywords will return a smaller amount of results. When you put a + sign in between keywords you are asking a search engine to find results where both words appear in the search. An example might be: *birds +eagle*.

The minus (-) sign
When introducing the minus (-) sign to students, it's helpful to point out that in math class, - usually means subtracting or taking away. In search engines it means do not include.

We just searched for *birds +eagle* to get a list of websites that contained both the words bird and eagle. Suppose you wanted to search for birds but didn't want any information about eagles. Here is a prime example of when to use the minus (-) sign. Simply search using the query *birds –eagle*.

Using quotation marks
What happens if a search term is actually a phrase? What do you do? This is where quotation marks come in. Quotation marks allow a researcher to find an exact phrase within a website. For example, let's say you wanted to find out about all birds except for eagles in North America. Your query would be *birds +"North America" –eagle*.

Boolean operators AND, OR, NOT
Booleans are used when searching with keywords. They include AND, OR, NOT and must be used in ALL CAPITAL LETTERS to work properly. A space should be provided on either side.

AND in a search means you are looking for sites that contain both words. It may help narrow a search and works the same as adding a + sign. For example, if researching information about aquariums in Florida, the Boolean search would be:

florida AND aquarium

Placing OR in between two keywords in a search means you are searching for both words at the same time. Your search will yield more results. OR works differently than AND. AND makes sure both words appear in your results. OR makes sure either word appears in your results.

florida OR aquarium

Have students use OR when they are not exactly sure how a keyword will appear in the information they are looking for. For example, if they are looking for particular information about schools, consider the variations of keywords, such as *child OR student*; *teacher OR educator*; *school OR academy*…

If ever you are unsure how your information will be presented, cover all your options!
Examples: *archeology OR archaeology*; *Ireland OR Eire*; *car OR automobile*; *train OR rail*.

NOT** placed before a keyword translates to do not include. It works similar to the minus (-) sign.

florida NOT aquarium

***There is discrepancy between which search engines will accept NOT. Google will not accept it; Alta Vista requires AND NOT. Since there is little consistency, we advise that students use the minus sign instead.*

Activity
Practice mixing these operators together to create targeted search queries. For example, if you assigned students to research comparisons between the Statue of Liberty and the Greek goddess Athena, their query might look like this:

"statue of liberty" +Athena +compare

In the results of this query, they will see several references to the Liberty Warehouse owned by the Athena Group. Therefore, they might choose to adjust their query a bit to look like this:

"statue of liberty" +Athena +compare –"Athena group"

At some point, students might end up with no results because they have been too specific. If that's the case, simply start removing keywords to gradually broaden the search.

Try some of the following searches using the operators described in this section.

1. ***I would like information about penguins in South Africa.***
2. ***I would like to know about walking tours in San Francisco.***
3. ***I want to know about Orlando, but I don't want any information about hotels.***
4. ***I want to know about cars and trucks, but don't want to include Ford vehicles.***

Effective Search Practices – Searching with Extensions

Earlier, we discussed the fact that all website URLs contain extensions, tiny bits of information that can provide clues about a website. For example, we mentioned that the extension .edu means that particular website belongs to a university while .gov tells you that the website is produced by a government agency.

Sometimes, a website that has two extensions, such as the website for the University of Oxford (http://www.ox.ac.uk). In this case, the extensions .ac and .uk tell us that the website belongs to a university in = the United Kingdom.

Every country has its own country code. A list of these codes can be found at:
http://goes.gsfc.nasa.gov/text/web_country_codes.html

As you and your students are conducting research, there are several ways that extensions can be used to obtain a concise set of focused results. Let's take a look at a few now.

The host: command**

Let's say you have your students researching lung cancer as part of a science unit. Many students will simply go to their search engine and type the phrase lung cancer into the search box. By doing this, there will be a wide variety of results, and many of these results may contain inaccurate information.

To help narrow down and find more accurate results, consider using the host: command within AltaVista and the .gov extension.

"lung cancer" + host:gov

What we have done here is narrow down our results to a list of government websites that discuss lung cancer.

It doesn't stop there! We can use an entire domain name with the host: command as well. Take the same example listed above, and narrow the results down to one particular government agency, the Centers for Disease Control and Prevention.

"lung cancer" + host:cdc.gov

If you want to focus your search within .k12 schools of a particular state, you can even do that with the host: command. For example, if you have students who are researching the history of Mardi Gras, you might have them find out what students in Louisiana have to say on the subject. Simply use the following search query:

"mardi gras history" + host:k12.la.us

Keep in mind that while a large number of schools in the United States use the .k12 extension, many do not.

Use the "host:" command to go global

If you wish to take your search global, you can do that by adding Country Codes to your search request. To find out what resources there are in South Africa on apartheid or what Japanese sites have resources on haiku poetry, simply add a keyword and a Country Code to a host: command search. The Country Code for South Africa is .za and the Code for Japan is .jp.

Again, every country has its own country code. A list of these codes can be found at:
http://goes.gsfc.nasa.gov/text/web_country_codes.html

For the examples listed above, perform the following searches in AltaVista.

apartheid + host:za

haiku + host:jp

Imagine the possibilities this can have in your classroom. Instead of having students simply write a report on women's rights, have them prepare a project that compares the issue of women's rights in Afghanistan, Israel, Rwanda and Vietnam. Information for this project can be obtained by running four separate searches.

"women's rights" + host:af
"women's rights" + host:il
"women's rights" + host:rw
"women's rights" + host:vn

Of course, as students find websites to use for such a project, you will want them to use the validation process discussed earlier.

**These examples are true when using AltaVista. If Google is being used, you can accomplish the same task using the site: command.

Activity
Using the sheet on the next page, play a guessing game whereby generating a "best guess" of a host: command search given the suggested topic. Invent a possible search request that uses common extensions and country codes. Use the URL listed earlier in this section to obtain the country codes. Assume that all of the searches will be done in Alta Vista.

Searching with the host: command

Directions: Invent a possible search request that uses common extensions and country codes. Visit http://goes.gsfc.nasa.gov/text/web_country_codes.html to obtain the country codes. Assume that all of the searches will be done in Alta Vista.

Example
Scenario: You are researching population statistics in the UK.
Search: host:gov.uk + population

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1. Scenario: You are researching Japanese cuisine and want to go to the source.

   Search: host: _____

2. Scenario: You are researching school sites in the UK that include the word poetry.

   Search: host: _____

3. Scenario: You are researching cancer research in government sites.

   Search: host: _____

4. Scenario: You are researching weather patterns in New Zealand.

   Search: host: _____

5. Scenario: You are researching birth rates in Ethiopia.

   Search: host: _____

6. Scenario: You are researching football scores in the UK.

   Search: host: _____

Effective Search Practices – Recommended Search Engines

For many day-to-day searches, Google, Yahoo, or another favorite search engine of yours will probably get the job done. But if your goal is to obtain information for scholarly research, you may want to consider a few other options. Below is a list of a few.

Ask.com – http://www.ask.com

- The results within this site have been ranked by topic experts.
- Along with a list of results, Ask.com provides researches with suggestions on ways to narrow and expand searches. These suggestions help students to focus their searches as well as build upon knowledge.
- For younger students, Ask.com offers a child friendly version. This version can be found at http://www.askforkids.com

Answers.com – http://www.answers.com

- All of the results within Answers.com are obtained from reference materials.
- As search queries are entered, a drop-down list helps students narrow their inquiries.
- At the bottom of each page, in an area labeled *Copyrights*, researchers can construct a list of citations for resources obtained from Answers.com. Next to each resource, click the *"Cite"* bubble. Select if you want your citation in APA, MLA or Chicago format. The resulting citation can be copied and pasted into a research document.

Noodletools – http://www.noodletools.com

- The NoodleTools search page is like a search engine for search engines. The site helps students design search strategies based around the analysis of a topic.
- Students are given suggested search sites to use based on the type of information they are looking for.
- The NoodleTools page also offers a citation maker that can be used by students of all ages.

NoodleQuest – http://www.noodletools.com/noodlequest

- NoodleQuest is very similar to NoodleTools. You will receive the same results, but he page is a bit more interactive.

Activity

Pick a topic of interest based around a unit of study in your subject area. Search for that topic using the search engine techniques you have learned thus far in AltaVista and Google.

Then, search for the same information using the search websites listed above.

- Compare the results from these three sites.
- From what sources do the pieces of information you gather from these sites pull?
- What do each of these sites provide that would enrich the research?